

Princeton University - Phase 1a (ECE) Blasting  
 Ground Vibration Readings  
 7/22/2022

Date	Blast No.	Blasting Phase	Ctr for Jewish Life			Bobst Hall			Frick Lab			Cannon Club			Peyton Hall			Charter Club			Cap & Gown Club			Ivy Club		
			70 Washington			83 Prospect			Washington			21 Prospect			4 Ivy			79 Prospect			61 Prospect			43 Prospect		
			Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz
3/15/2022	1 (Test Blast)	1a	-	-	-	425	0.465	32.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
3/16/2022	2	1a	-	-	-	418	0.350	30.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
3/17/2022	3	1a	-	-	-	488	0.167	28.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
3/18/2022	4	1a	-	-	-	398	0.465	30.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
3/22/2022	5	1a	-	-	-	500	0.313	28.4	1450	0.058	12.8	-	-	-	-	-	-	-	-	-	-	-	-	-		
3/23/2022	6	1a	-	-	-	420	0.662	28.4	1450	0.087	34.1	-	-	-	-	-	-	-	-	-	-	-	-	-		
3/24/2022	7	1a	-	-	-	520	0.297	21.3	1450	0.065	28.4	-	-	-	-	-	-	-	-	-	-	-	-	-		
3/25/2022	8	1a	-	-	-	400	0.517	32.0	1450	0.043	32.0	-	-	-	-	-	-	-	-	-	-	-	-	-		
3/29/2022	9	1a	-	-	-	450	0.405	32.0	1450	0.095	23.2	-	-	-	-	-	-	-	-	-	-	-	-	-		
3/30/2022	10	1a	-	-	-	390	0.642	25.6	1450	0.095	25.6	-	-	-	-	-	-	-	-	-	-	-	-	-		
3/31/2022	11	1a	-	-	-	463	0.465	23.2	1450	0.450	42.6	-	-	-	-	-	-	-	-	-	-	-	-	-		
4/1/2022	12	1a	-	-	-	390	0.260	19.6	1450	0.025	28.4	-	-	-	-	-	-	-	-	-	-	-	-	-		
4/5/2022	13	1a	-	-	-	380	0.377	30.1	1450	0.038	28.4	-	-	-	-	-	-	-	-	-	-	-	-	-		
4/6/2022	14	1a	-	-	-	401	0.460	25.6	1450	0.100	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-		
4/7/2022	15	1a	-	-	-	395	0.425	26.9	1450	0.063	30.1	-	-	-	-	-	-	-	-	-	-	-	-	-		
4/8/2022	16	1a	-	-	-	446	0.335	30.1	1450	0.080	12.1	-	-	-	-	-	-	-	-	-	-	-	-	-		
4/12/2022	17	1a	-	-	-	384	0.447	34.1	1450	0.108	30.1	-	-	-	-	-	-	-	-	-	-	-	-	-		
4/14/2022	18	1a	-	-	-	382	0.467	39.3	1450	0.078	25.6	-	-	-	-	-	-	-	-	-	-	-	-	-		
4/15/2022	19	1a	1233	0.050	56.8	382	0.502	36.5	1450	0.073	23.2	-	-	-	-	-	-	-	-	-	-	-	-	-		
4/19/2022	20	1a	1202	0.065	36.5	416	0.485	32.0	1165	0.068	17.0	-	-	-	-	-	341	0.460	39.3	495	0.220	24.3	744	0.065	15.0	
4/20/2022	21	1a	1183	0.050	23.2	420	0.355	28.4	1142	0.050	21.3	992	0.025	20.4	-	-	-	351	0.230	32.0	445	0.105	24.3	705	0.050	25.6
4/25/2022	22	1a	1216	0.045	25.6	360	0.422	42.6	1319	0.053	36.5	1018	0.030	46.5	918	0.040	46.5	419	0.290	36.5	589	0.100	30.1	823	0.070	39.3
4/27/2022	23	1a	1592	0.040	17.0	503	0.308	16.5	1532	0.050	28.4	1364	0.030	16.0	1154	0.035	13.1	558	0.205	21.3	756	0.205	17.0	1079	0.070	10.6
4/29/2022	24	1a	1661	0.030	28.4	511	0.200	17.0	1538	0.035	39.3	1440	NT	NT	1157	0.025	18.9	586	0.115	39.3	815	0.125	19.6	1151	0.040	12.4
5/3/2022	25	1a	1491	0.035	39.3	490	0.223	30.1	1394	0.048	21.3	1355	0.025	24.3	1009	0.050	16.0	540	0.140	30.1	717	0.085	25.6	1060	0.070	16.0
5/5/2022	26	1a	1371	0.040	25.6	317	0.413	39.3	1382	0.043	39.3	1184	0.035	32.0	887	0.035	32.0	364	0.325	46.5	305	0.120	16.0	858	0.065	17.0
5/6/2022	27	1a	1473	NT	NT	338	0.230	24.3	1506	NT	NT	1328	NT	NT	1010	NT	NT	391	0.265	28.4	658	0.095	21.3	970	0.035	42.6
5/9/2022	28	1a	1381	NT	NT	400	0.242	22.2	1530	0.025	26.9	1385	NT	NT	1093	0.025	20.4	440	0.160	25.6	724	0.090	18.2	1062	NT	NT
5/10/2022	29	1a	1289	0.030	16.0	490	0.155	26.9	1232	0.043	18.2	1153	0.025	16.5	780	0.045	25.6	550	0.125	30.1	523	0.070	21.3	860	0.055	17.6
<b>ECE BLASTING COMPLETED 5/10/2022</b>																										

Date	Blast No.	Blasting Phase	Princeton Stadium			Clarke Field			Lot 4			Residence			Residence			Residence			PU Facility			Residence		
			19 Ivy			25 Western			5 Roper			105 Fitzrandolph			111 Fitzrandolph			114 Fitzrandolph			127 Fitzrandolph			128 Fitzrandolph		
			Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz
3/15/2022	1 (Test Blast)	1a	675	0.220	24.3	235	1.010	30.1	290	1.200	32.0	-	-	-	-	-	-	-	-	-	170	2.090	34.1	-	-	-
3/16/2022	2	1a	650	0.145	28.4	235	0.995	39.3	270	1.350	26.9	-	-	-	-	-	-	-	-	-	188	1.020	30.1	-	-	-
3/17/2022	3	1a	630	0.082	23.2	210	1.390	28.4	275	0.582	26.9	-	-	-	-	-	-	-	-	-	240	0.635	30.1	-	-	-
3/18/2022	4	1a	625	0.210	28.4	220	1.655	32.0	247	1.375	46.5	-	-	-	-	-	-	-	-	-	258	1.038	25.6	-	-	-
3/22/2022	5	1a	575	0.225	28.4	554	0.365	46.5	520	0.180	30.1	-	-	-	-	-	-	-	-	-	259	1.205	39.3	-	-	-
3/23/2022	6	1a	550	0.222	42.6	542	0.275	39.3	614	0.255	28.4	-	-	-	-	-	-	-	-	-	216	1.360	42.6	-	-	-
3/24/2022	7	1a	577	0.172	16.0	520	0.270	21.3	600	0.167	28.4	-	-	-	-	-	-	-	-	-	273	0.637	23.2	-	-	-
3/25/2022	8	1a	563	0.175	42.6	603	0.165	32.0	650	0.175	46.5	-	-	-	-	-	-	-	-	-	240	0.745	36.5	-	-	-
3/29/2022	9	1a	550	0.325	24.3	563	0.325	34.1	650	0.237	13.8	-	-	-	-	-	-	-	-	-	277	0.590	46.5	-	-	-
3/30/2022	10	1a	530	0.290	26.9	613	0.210	36.5	623	0.247	20.4	-	-	-	-	-	-	-	-	-	261	0.995	32.0	-	-	-
3/31/2022	11	1a	515	0.193	23.2	565	0.235	64.0	700	0.130	13.8	-	-	-	-	-	-	-	-	-	302	0.480	42.6	-	-	-
4/1/2022	12	1a	663	0.060	34.1	587	0.090	30.1	700	0.077	26.9	-	-	-	-	-	-	-	-	-	144	1.175	46.5	-	-	-
4/5/2022	13	1a	581	0.130	30.1	590	0.125	42.6	655	0.152	36.5	-	-	-	-	-	-	-	-	-	186	0.700	32.0	-	-	-
4/6/2022	14	1a	505	0.285	23.2	510	0.305	46.5	800	0.265	14.6	-	-	-	-	-	-	-	-	-	284	0.672	26.9	-	-	-
4/7/2022	15	1a	481	0.220	24.3	560	0.185	46.5	775	0.222	26.9	-	-	-	-	-	-	-	-	-	284	0.720	28.4	-	-	-
4/8/2022	16	1a	466	0.220	26.9	560	0.245	56.8	690	0.210	12.8	-	-	-	-	-	-	-	-	-	327	0.537	32.0	-	-	-
4/12/2022	17	1a	470	0.225	32.0	607	0.260	51.2	720	0.240	25.6	-	-	-	-	-	-	-	-	-	329	0.650	36.5	-	-	-
4/14/2022	18	1a	440	0.230	25.6	615	0.180	39.3	720	0.222	21.3	-	-	-	-	-	-	-	-	-	352	0.547	51.2	-	-	-
4/15/2022	19	1a	411	0.312	20.4	591	0.180	39.3	696	0.262	26.9	-	-	-	-	-	-	-	-	-	370	0.510	36.5	-	-	-
4/19/2022	20	1a	405	0.275	25.6	604	0.165	46.5	520	0.232	28.4	689	0.155	85.3	587	0.160	36.5	755	0.115	22.2	390	0.437	34.1	748	0.185	28.4
4/20/2022	21	1a	381	0.315	30.1	407	0.145	30.1	496	0.187	23.2	751	0.060	26.9	624	0.090	42.6	812	0.050	32.0	414	0.242	25.6	811	0.070	32.0
4/25/2022	22	1a	460	0.132	25.6	405	0.150	42.6	508	0.175	32.0	535	0.180	28.4	451	0.275	56.8	645	0.125	64.0	262	0.737	36.5	642	0.230	102.4
4/27/2022	23	1a	660	0.103	18.2	434	0.200	36.5	671	0.123	24.3	395	0.225	73.1	260	0.310	85.3	561	0.185	73.1	145	0.955	42.6	475	0.430	73.1
4/29/2022	24	1a	680	0.100	26.9	385	0.185	56.8	736	0.093	28.4	443	0.150	25.6	324	0.235	28.4	474	0.130	18.9	155	0.770	30.1	398	0.275	51.2
5/3/2022	25	1a	440	0.213	30.1	172	0.180	46.5	779	0.140	26.9	553	0.100	32.0	450	0.150	28.4	614	0.105	22.2	333	0.397	32.0	527	0.105	39.3
5/5/2022	26	1a	476	0.173	34.1	342	0.150	42.6	569	0.193	36.5	518	0.185	28.4	500	0.185	51.2	458	0.110	25.6	294	0.440	51.2	629	0.155	64.0
5/6/2022	27	1a	619	0.083	25.6	338	0.090	39.3	648	0.120	34.1	400	0.155	23.2	350	0.150	46.5	552	0.150	26.9	198	0.893	36.5	510	0.145	32.0
5/9/2022	28	1a	674	0.065	25.6	378	0.090	32.0	744	0.085	24.3	355	0.095	64.0	400	0.170	46.5	466	0.125	42.6	120	1.352	51.2	400	0.215	56.8
5/10/2022	29	1a	340	0.168	34.1	216	0.125	39.3	506	0.118	22.2	691	0.065	28.4	613	0.100	51.2	801	0.055	25.6	409	0.205	26.9	450	0.095	36.5

**ECE BLASTING COMPLETED 5/10/2022**

Date	Blast No.	Blasting Phase	Residence			Residence			Residence			Residence			Residence			Residence			Residence					
			139 Fitzrandolph			44 Murray Place			57 Murray Place			76 Murray Place			Prospect Ave / 84 Murray			121 Broadmead			128 Broadmead			176 Western Way		
			Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz
3/15/2022	1 (Test Blast)	1a	165	2.390	42.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
3/16/2022	2	1a	270	1.070	28.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
3/17/2022	3	1a	170	0.892	34.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
3/18/2022	4	1a	293	1.158	34.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
3/22/2022	5	1a	220	1.320	32.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
3/23/2022	6	1a	312	1.360	28.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
3/24/2022	7	1a	257	0.885	22.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
3/25/2022	8	1a	337	1.130	34.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
3/29/2022	9	1a	341	0.855	32.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
3/30/2022	10	1a	365	0.847	32.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
3/31/2022	11	1a	366	0.655	39.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
4/1/2022	12	1a	163	1.490	30.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
4/5/2022	13	1a	286	0.770	36.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
4/6/2022	14	1a	385	0.897	23.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
4/7/2022	15	1a	385	0.817	30.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
4/8/2022	16	1a	408	0.495	28.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
4/12/2022	17	1a	443	0.887	30.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
4/14/2022	18	1a	470	0.597	34.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
4/15/2022	19	1a	410	0.532	28.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
4/19/2022	20	1a	510	0.477	34.1	-	-	-	-	-	-	924	0.060	28.4	849	0.130	19.6	-	-	-	-	-	-	-		
4/20/2022	21	1a	534	0.215	34.1	-	-	-	-	-	-	988	0.030	30.1	922	0.050	24.3	-	-	-	-	-	-	-		
4/25/2022	22	1a	380	0.452	42.6	-	-	-	-	-	-	775	0.060	42.6	735	0.150	18.9	-	-	-	-	-	-	-		
4/27/2022	23	1a	230	1.867	36.5	-	-	-	-	-	-	725	0.085	73.1	621	0.215	18.9	-	-	-	-	-	-	-		
4/29/2022	24	1a	141	0.893	30.1	-	-	-	-	-	-	781	0.060	51.2	675	0.205	18.9	-	-	-	-	-	-	-		
5/3/2022	25	1a	342	0.447	36.5	-	-	-	-	-	-	877	0.040	26.9	782	0.120	19.6	-	-	-	-	-	-	-		
5/5/2022	26	1a	417	0.360	23.2	-	-	-	-	-	-	811	0.060	73.1	749	0.180	18.9	-	-	-	-	-	-	-		
5/6/2022	27	1a	320	1.115	36.5	-	-	-	-	-	-	740	0.035	85.3	663	0.155	17.6	-	-	-	-	-	-	-		
5/9/2022	28	1a	233	1.762	34.1	-	-	-	774	0.048	28.4	677	0.035	51.2	590	0.105	18.9	1140	0.095	34.1	-	-	-	-		
5/10/2022	29	1a	467	0.195	23.2	1279	0.023	36.5	1072	0.030	21.3	1001	0.020	51.2	961	0.030	32.0	1106	0.050	39.3	1209	0.035	51.2	764	0.113	23.2
<b>ECE BLASTING COMPLETED 5/10/2022</b>																										

Notes:

- 3/15/2022 Exceedances noted at 127 and 139 Fitzrandolph. Blast design adjusted for Shot #2
- 3/16/2022 Added additional (MD&B owned) seismograph at 139 Fitzrandolph property's foundation. Information above is based on original Sauls seismograph at the property's hedge row.
- 3/22/2022 Added additional seismograph at Frick Chemistry Lab (distance approximated from Google maps)
- 4/19/2022 Added additional seismographs at Prospect Ave, Fitzrandolph Road, & Murray Place
- 4/29/2022 Cannon Club Seismograph Not Triggered (PPV did not reach minimum threshold limits of the recording equipment)
- 5/6/2022 Multiple Seismograph Not Triggered (PPV did not reach minimum threshold limits of the recording equipment)
- 5/9/2022 Added additional seismograph at 56 Murray Place and 121 Broadmead Street
- 5/10/2022 Added additional seismograph at 121 Prospect, 44 Murray, 128 Broadmead, and 176 Western Way.
- 5/10/2022 Seismograph relocated from 84 Murray to 121 Prospect Avenue.

Princeton University - Phase 1b (ES & Commons) Blasting  
 Ground Vibration Readings  
 10/4/2022

Date	Blast No.	Blasting Phase	Ctr for Jewish Life			Bobst Hall			Frick Lab			Cannon Club			Peyton Hall			Charter Club			Cap & Gown Club			Ivy Club			Princeton Stadium			
			70 Washington			83 Prospect			Washington			21 Prospect			4 Ivy			79 Prospect			61 Prospect			43 Prospect			19 Ivy			
			Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	
4/18/2022	1 (Test Blast)	1b	507	0.095	25.6	811	0.055	24.3	800	0.042	18.2	-	-	-	170	0.180	42.6	-	-	-	-	-	-	296	0.225	34.1	328	0.097	28.4	
4/22/2022	2	1b	394	0.330	32.0	872	0.158	39.3	800	0.095	17.6	373	0.180	22.2	151	0.325	30.1	691	0.220	30.1	390	0.245	36.5	315	0.415	32.0	340	0.247	25.6	
4/26/2022	3	1b	383	0.425	32.0	858	0.148	36.5	750	0.053	24.3	349	0.300	32.0	194	0.275	36.5	671	0.175	32.0	377	0.235	34.1	302	0.640	39.3	415	0.180	26.9	
4/28/2022	4	1b	391	0.245	42.6	842	0.108	46.5	786	0.043	26.9	333	0.330	36.5	212	0.205	32.0	662	0.165	73.1	365	0.235	26.9	295	0.565	26.9	430	0.165	28.4	
5/4/2022	5	1b	290	0.745	34.1	1014	0.090	36.5	953	0.065	30.1	323	0.315	23.2	198	0.230	32.0	500	0.120	51.2	509	0.130	20.4	290	0.375	34.1	427	0.110	34.1	
5/11/2022	6	1b	296	1.145	39.3	1011	0.098	51.2	975	0.043	51.2	325	0.325	26.9	240	0.215	34.1	400	0.185	102.4	344	0.200	26.9	265	0.630	34.1	764	0.155	42.3	
5/16/2022	7	1b	370	0.160	34.1	778	0.115	39.3	963	0.040	39.3	460	0.085	28.4	172	0.295	34.1	605	0.115	36.5	326	0.200	34.1	286	0.350	30.1	499	0.158	36.5	
NO BLASTING ON-SITE FROM 5/16/2022 - 10/04/2022*																														
Date	Blast No.	Blasting Phase	Clarke Field			Lot 4			Residence			Residence			Residence			PU Facility			Residence			Residence			Residence			
			25 Western			5 Roper			105 Fitzrandolph			111 Fitzrandolph			114 Fitzrandolph			127 Fitzrandolph			128 Fitzrandolph			139 Fitzrandolph			44 / 46 Murray Pl.			
			Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	
4/18/2022	1 (Test Blast)	1b	1011	0.025	73.1	250	0.392	42.6	-	-	-	-	-	-	-	-	-	-	1125	0.035	39.3	-	-	-	1275	0.030	23.2	-	-	-
4/22/2022	2	1b	1039	0.080	51.2	333	0.825	32.0	1417	0.050	39.3	1348	0.060	51.2	1561	0.045	24.3	1155	0.078	42.6	1532	0.050	46.5	1296	0.063	39.3	-	-	-	
4/26/2022	3	1b	1049	0.060	56.8	323	0.700	34.1	1402	0.045	32.0	1338	0.070	64.0	1554	0.050	56.8	1141	0.065	42.6	1533	0.045	73.1	1294	0.055	32.0	-	-	-	
4/28/2022	4	1b	1068	0.055	64.0	317	0.548	39.3	1405	0.035	39.3	1350	0.055	56.8	1559	0.035	46.5	1137	0.068	64.0	1521	0.055	51.2	1307	0.048	28.4	-	-	-	
5/4/2022	5	1b	1186	0.055	56.8	519	0.493	39.3	1536	0.040	34.1	1502	0.040	24.3	1729	0.030	64.0	1344	0.053	36.5	1717	0.040	46.5	1476	0.045	26.9	-	-	-	
5/11/2022	6	1b	1166	0.085	73.1	489	0.673	36.5	1497	0.050	39.3	1454	0.060	102.4	1685	0.035	42.6	1298	0.063	25.6	1663	0.050	64.0	1430	0.060	32.0	1808	0.040	30.1	
5/16/2022	7	1b	929	0.065	39.3	235	0.590	36.5	1281	0.040	32.0	1241	0.040	85.3	1461	0.030	46.5	1070	0.048	32.0	1434	0.040	42.6	1206	0.055	25.6	1643	0.033	34.1	
NO BLASTING ON-SITE FROM 5/16/2022 - 10/04/2022*																														
Date	Blast No.	Blasting Phase	Residence			Residence			Residence			Residence			Residence			Residence			Residence									
			57 Murray Place			76 Murray Place			121 Prospect Ave			121 Broadmead			128 Broadmead			176 Western Way			36 Princeton Ave									
			Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz				
4/18/2022	1 (Test Blast)	1b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
4/22/2022	2	1b	-	-	-	1563	0.030	42.6	1560	0.040	28.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
4/26/2022	3	1b	-	-	-	1556	0.025	64.0	1543	0.040	22.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
4/28/2022	4	1b	-	-	-	1532	0.020	73.1	1515	0.030	32.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
5/4/2022	5	1b	-	-	-	1731	0.020	64.0	1733	0.050	24.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
5/11/2022	6	1b	1627	0.065	32.0	1694	0.030	85.3	1760	0.025	73.1	2060	0.043	46.5	2207	0.030	64.0	1773	0.055	36.5	2329	0.038	73.1	-	-	-	-	-	-	
5/16/2022	7	1b	1458	0.040	26.9	1499	NT	NT	1495	NT	NT	1839	0.033	56.8	1977	NT	NT	1536	0.043	39.3	2149	NT	NT	-	-	-	-	-	-	
NO BLASTING ON-SITE FROM 5/16/2022 - 10/04/2022*																														

Notes:

- 4/19/2022 Added additional seismographs at Prospect Ave, Fitzrandolph Road, & Murray Place
- 5/9/2022 Added additional seismograph at 56 Murray Place and 121 Broadmead Street
- 5/11/2022 Added additional seismograph at 121 Prospect, 44 Murray, 128 Broadmead, 176 Western Way, & 36 Princeton Ave.
- 5/11/2022 Seismograph relocated from 84 Murray to 121 Prospect Avenue.
- 5/16/2022 Multiple Seismograph Not Triggered (PPV did not reach minimum threshold limits of the recording equipment)

\* The project team has been able to remove rock from the site using mechanical excavation rather than requiring blasting to fracture the rock prior to removal in this area. It is anticipated that the area of "rippable rock" on the site is limited, and blasting will again be necessary to complete excavation work both in areas 1B and 1C.

Princeton University - Phase 1C (SEAS) Blasting  
 Ground Vibration Readings  
 12/19/2022

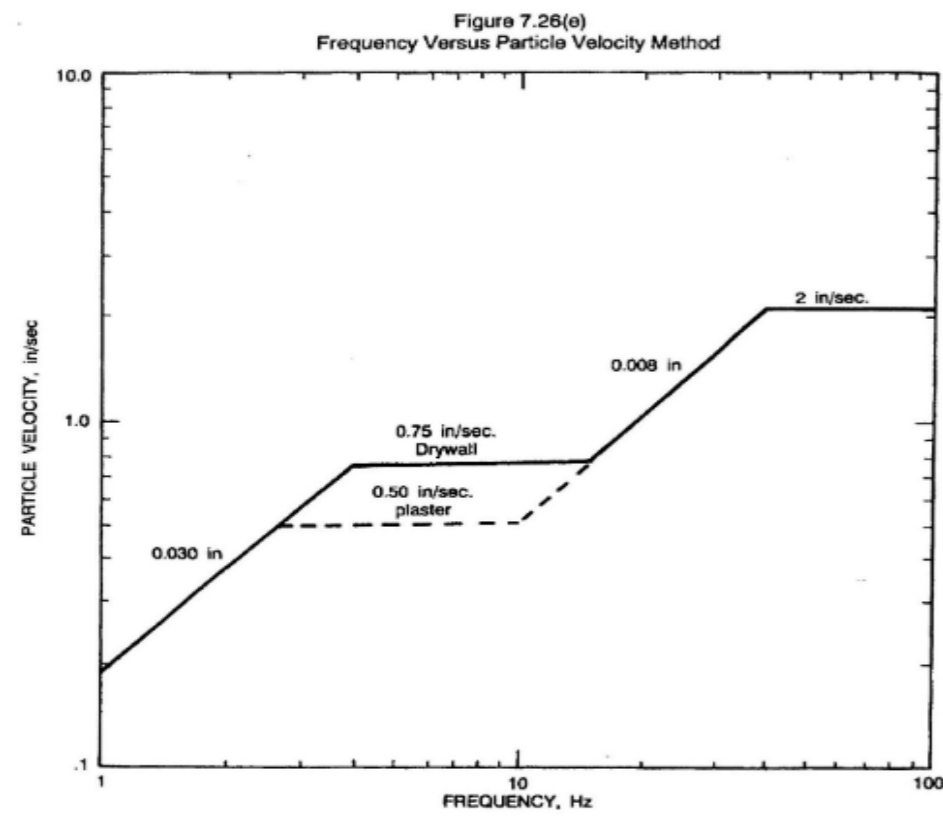
Date	Shot No.	Blasting Area	Ctr for Jewish Life (University Owned)			Bobst Hall (University Owned)			Cottage Club (Roper)			Cannon Club			Peyton Hall (University Owned)			Charter Club			Cap & Gown Club			Ivy Club			Princeton Stadium (University Owned)		
			70 Washington			83 Prospect			51 Prospect			21 Prospect			4 Ivy			79 Prospect			61 Prospect			43 Prospect			19 Ivy		
			Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz
10/5/2022	1 (Test Blast)	1C	1479	0.000	0.0	209	0.275	34.1	816	0.000	0.0	1376	0.000	0.0	1333	0.000	0.0	376	0.115	36.5	611	0.040	22.2	1037	0.000	0.0	730	0.000	0.0
10/13/2022	2	1C	1535	0.000	0.0	255	0.235	34.1	820	0.040	20.4	1399	0.000	0.0	1279	0.000	0.0	408	0.125	36.5	693	0.055	17.0	1065	0.000	0.0	786	0.030	28.4
10/14/2022	3	1C	1535	0.000	0.0	285	0.145	25.6	853	0.023	17.6	1426	0.000	0.0	1256	0.000	0.0	436	0.075	46.5	726	0.040	18.9	1101	0.000	0.0	776	0.000	0.0
10/17/2022	4	1C	1149	0.000	0.0	261	0.215	26.9	774	0.025	26.9	1225	0.000	0.0	1046	0.000	0.0	269	0.130	46.5	600	0.045	21.3	919	0.000	0.0	731	0.028	36.5
10/18/2022	5	1C	1533	0.000	0.0	231	0.235	32.0	857	0.040	102.4	1333	0.000	0.0	1093	0.000	0.0	372	0.135	34.1	690	0.050	16.0	1013	0.000	0.0	724	0.000	0.0
10/19/2022	6	1C	1547	0.000	0.0	243	0.265	34.1	879	0.025	23.2	1340	0.000	0.0	1114	0.000	0.0	383	0.180	39.3	736	0.055	32.0	1037	0.000	0.0	788	0.025	56.8
10/20/2022	7	1C	1495	0.000	0.0	246	0.410	25.6	819	0.050	25.6	1311	0.000	0.0	1042	0.025	20.4	342	0.365	36.5	666	0.085	20.4	980	0.025	21.3	752	0.070	25.6
10/21/2022	8	1C	1594	0.000	0.0	258	0.335	42.6	883	0.033	23.2	1371	0.000	0.0	1112	0.000	0.0	396	0.140	39.3	723	0.040	34.1	1035	0.000	0.0	793	0.000	0.0
10/24/2022	9	1C	1526	0.000	0.0	186	0.270	30.1	834	0.035	26.9	1320	0.000	0.0	1061	0.000	0.0	340	0.185	32.0	673	0.045	28.4	992	0.000	0.0	770	0.030	18.9
10/25/2022	10	1C	1580	0.000	0.0	291	0.170	36.5	908	0.030	11.1	1378	0.000	0.0	1104	0.000	0.0	416	0.115	36.5	727	0.035	18.2	1060	0.000	0.0	804	0.025	25.6
10/28/2022	11	1C	1537	0.000	0.0	165	0.480	30.1	840	0.053	24.3	1309	0.000	0.0	1085	0.000	0.0	329	0.340	42.6	676	0.075	39.3	990	0.025	32.0	785	0.048	30.1
11/3/2022	12	1C	1359	0.000	0.0	282	0.060	32.0	708	0.000	0.0	1176	0.000	0.0	877	0.000	0.0	303	0.045	34.1	549	0.000	0.0	870	0.000	0.0	560	0.000	0.0
NO BLASTING ON-SITE FROM NOW UNTIL MID-FEBRUARY																													
Date	Shot No.	Blasting Area	Clarke Field (University Owned)			Residence			Residence			Residence			Residence			PU Facility (University Owned)			Residence			Residence (University Owned)			Residence		
			25 Western			115 Prospect			105 Fitzrandolph			111 Fitzrandolph			114 Fitzrandolph			127 Fitzrandolph			128 Fitzrandolph			139 Fitzrandolph			44 / 46 Murray Pl.		
			Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz
10/5/2022	1 (Test Blast)	1C	501	0.000	0.0	238	0.405	64.0	389	0.088	51.2	297	0.470	51.2	570	0.057	42.6	206	0.360	46.5	589	0.058	51.2	327	0.113	36.5	978	0.000	0.0
10/13/2022	2	1C	490	0.023	42.6	175	0.595	56.8	294	0.165	32.0	229	0.880	51.2	484	0.090	39.3	115	1.063	46.5	476	0.100	42.6	287	0.340	51.2	871	0.000	0.0
10/14/2022	3	1C	455	0.000	0.0	208	0.240	58.3	316	0.068	32.0	336	0.200	85.3	496	0.055	39.3	NR	NR	NR	471	0.078	128.0	230	0.723	46.5	910	0.000	0.0
10/17/2022	4	1C	517	0.000	0.0	261	0.175	39.5	386	0.085	36.5	350	0.175	51.2	566	0.052	30.1	108	0.853	32.0	575	0.063	56.8	402	0.230	34.1	899	0.000	0.0
10/18/2022	5	1C	435	0.000	0.0	243	0.235	56.8	360	0.063	170.6	293	0.205	39.3	501	0.058	25.6	138	0.325	64.0	482	0.070	73.1	317	0.200	51.2	935	0.000	0.0
10/19/2022	6	1C	460	0.000	0.0	213	0.410	46.5	320	0.128	39.3	264	0.030	51.2	475	0.065	24.3	117	0.435	46.5	470	0.088	64.0	277	0.233	46.5	906	0.000	0.0
10/20/2022	7	1C	440	0.028	34.1	264	0.435	36.5	385	0.093	42.6	331	0.265	51.2	540	0.068	39.3	168	0.390	25.6	520	0.078	51.2	355	0.230	30.1	951	0.033	51.2
10/21/2022	8	1C	478	0.000	0.0	216	0.425	39.3	242	0.153	39.3	281	0.410	46.5	493	0.070	46.5	105	0.468	22.2	471	0.088	46.5	309	0.200	46.5	931	0.025	51.2
10/24/2022	9	1C	447	0.000	0.0	252	0.245	46.5	378	0.083	42.6	320	0.190	46.5	534	0.050	56.8	171	0.178	32.0	517	0.058	73.1	350	0.115	42.6	939	0.000	0.0
10/25/2022	10	1C	413	0.000	0.0	234	0.265	36.5	351	0.068	36.5	283	0.240	46.5	477	0.053	20.4	93	0.540	56.8	452	0.063	28.4	269	0.248	39.3	957	0.000	0.0
10/28/2022	11	1C	495	0.028	51.2	231	0.415	85.3	345	0.143	36.5	303	0.310	51.2	521	0.083	30.1	162	0.363	51.2	521	0.088	64.0	372	0.198	36.5	892	0.030	42.6
11/3/2022	12	1C	340	0.000	0.0	444	0.050	32.0	571	0.000	0.0	514	0.000	0.0	710	0.000	0.0	327	0.058	23.2	669	0.000	0.0	445	0.033	26.9	1121	0.000	0.0
NO BLASTING ON-SITE FROM NOW UNTIL MID-FEBRUARY																													
Date	Shot No.	Blasting Area	Residence			Residence			Residence			Residence			Residence			Residence			Residence								
			57 Murray Place			76 Murray Place			121 Prospect Ave			121 Broadmead			128 Broadmead			176 Western Way			36 Princeton Ave								
			Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz	Feet	IN/S	Hz
10/5/2022	1 (Test Blast)	1C	712	0.028	85.3	687	0.025	39.3	568	0.025	46.5	901	0.028	46.5	1090	0.003	73.1	643	0.043	34.1	1297	0.000	0.0						
10/13/2022	2	1C	663	0.040	102.4	589	0.030	56.8	509	0.030	36.5	885	0.038	51.2	1010	0.033	73.1	598	0.113	34.1	1257	0.000	0.0						
10/14/2022	3	1C	715	0.033	34.1	616	0.000	0.0	545	0.000	0.0	805	0.030	56.8	996	0.038	73.1	576	0.103	25.6	1294	0.000	0.0						
10/17/2022	4	1C	734	0.028	39.3	649	0.030	22.2	626	0.025	36.5	993	0.030	51.2	1120	0.000	0.0	726	0.085	32.0	1328	0.000	0.0						
10/18/2022	5	1C	728	0.040	34.1	655	0.000	0.0	589	0.000	0.0	893	0.030	73.1	1039	0.000	0.0	637	0.080	28.4	1326	0.000	0.0						
10/19/2022	6	1C	707	0.033	32.0	631	0.000	0.0	553	0.025	28.4	876	0.040	30.1	1021	0.000	0.0	621	0.085	34.1	1291	0.000	0.0						
10/20/2022	7	1C	746	0.063	34.1	680	0.045	36.5	608	0.045	39.3	916	0.053	64.0	1126	0.045	73.1	676	0.085	23.2	1345	0.000	0.0						
10/21/2022	8	1C	729	0.040	42.6	649	0.030	52.2	577	0.030	36.5	874	0.043	39.3	1080	0.000	0.0	630	0.065	30.1	1325	0.000	0.0						
10/24/2022	9	1C	735	0.035	28.4	672	0.025	42.6	618	0.030	51.2	912	0.043	42.6	1123	0.000	0.0	669	0.058	39.3	1343	0.000	0.0						
10/25/2022	10	1C	756	0.023	39.3	664	0.000	0.0	590	0.000	0.0	838	0.030	34.1	1055	0.000	0.0	597	0.090	30.1	1328	0.000	0.0						
10/28/2022	11	1C	724	0.050	39.3	631	0.035	51.2	585	0.045	42.6	968	0.055	46.5	1081	0.000	0.0	681	0.088	32.0	1301	0.000	0.0						
11/3/2022	12	1C	912	0.000	0.0	865	0.000	0.0	806	0.000	0.0	1119	0.000	0.0	1226	0.000	0.0	788	0.000	0.0	1539	0.000	0.0						
NO BLASTING ON-SITE FROM NOW UNTIL MID-FEBRUARY																													

**Notes:**

- 10/4/2022 Seismograph installed at 115 Prospect
- 10/18/2022 Seismograph at 127 Fitzrandolph Checked & Repaired
- 11/3/2022 Seismograph at Ivy Club relocated
- 11/3/2022 Sacrificial SOE Blast

When monitoring vibration associated with blasting operations, the blasting frequency (Hz) and velocity (inches / second) are measured in three components (transverse, vertical and radial). The maximum velocity of any of these components is the critical data that is reviewed by the blasting firm after a blast is complete in comparison to the US Bureau of Mines curve below to confirm that blasting is within the threshold vibration level or velocity in terms of inches / second based on a specific frequency (Hz) of a blast.

A threshold of 2.0 inches / second corresponds to a frequency of 40 Hz or above and the State of NJ guidelines dictate that no blast vibration can exceed this 2.0 inches / second. A threshold of .50 inches / second for plaster and .75 inches / second for drywall is established when the frequency of a blast falls between 2.5-15 Hz.



Note to Figure  
\*Figure from U.S. Bureau of Mines, Report to Investigation 8507